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107A-6423-JWH
July 6, 2010

Ms. Christine Kump-Mitchell, P.E.
Missouri Department of Natural Resources
7545 South Lindbergh Blvd., Suite 210
St. Louis, MO 63125

Re: Revised Groundwater Sampling Plan for Boeing Tract I, Fall 2010 and Future Monitoring Events

BOEING

Dear Ms. Kump-Mitchell:

We have reviewed the results of the last two years of groundwater analytical data, the two risk assessments (RAM, September 2004 and Tetra Tech, March 2008) and the requirements for plume stability. Based on this review, we recommend that the Fall 2010 and future groundwater monitoring events be modified as discussed in this memorandum.

We recommend reducing the number of wells and the number of analytes being analyzed as follows:

1. In some areas there are several wells being monitored in very close proximity when only a few or none are needed to obtain sufficient data. These include Area 1 and Sub-areas 2A, 6C, and 8B. We recommend dropping nine wells from future groundwater sampling events.

2. We recommend dropping the TPH analyses per our January 12, 2010, memorandum titled *Risk Evaluation of TPH for Indoor Inhalation Pathway*.

3. We recommend dropping the dissolved metals analyses.

4. We recommend dropping analytes that have been either non-detectable, J-values, and/or below screening values during the past two years.

5. We recommend replacing MW-A12 with MW-A13 due to an obstruction at 4.6 feet below top of casing (ft btoc) in MW-A12.

6. We replaced MW-A15 with MW-A28 since MW-A15 manway was too small for installation of Snap Sampler® system.

Table 1 attached summarizes the recommended modifications. In the table, the highlighted wells and analytes are recommended to be dropped from the Fall 2010 and future groundwater sampling events.

Please contact me if you have any questions.

Sincerely,

Joe Haake

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cc: Rich Nussbaum, MDNR
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Table 1
Future Groundwater Analytical Methods
Boeing Tract 1, Hazelwood, Missouri

Location/ Sub-area	Monitoring Well	Shallow(S) Intermediate(I) Deep(D) Backfill(B) Well	No. of Times Sampled	Analytical Methods*																				Comments
				VOC	SVOC	PCB	TPH-GRO	TPH-DRO/ORO	As		Ba		Cd		Cr		Mn		Hg		Cr+6		
									Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	
Area 1: Runway Protection Zone (9 wells)																								
South of Bldg 45	MW-A15	S		X			X	X																Could not accept Snap Sampler®, replaced with MW-A28.
	MW-A22	S	4	X			X	X																
	MW-A23	S	4	X			X	X																
	MW-A25	S	2	X			X	X																Most upgradient well in Area 1.
	MW-A26	S	2	X			X	X																
	MW-A27	S	4	X			X	X																
	MW-A28**	S	1	X			X	X																Added to replace MW-A15. Mid-gradient well in Area 1.
	MW-A29	S	2	X			X	X																
Hush House	MW-A1	S	4	X			X	X	X	X														Sample if NAPL and sheen not present. Most downgradient wells in Area 1
	MW-A3	S	2	X			X	X	X															
Area 2: Demolished Area (8 wells)																								
2A	MW-A8	S	4						X				X											Overall higher concentrations in Area 2A. No Cd SL exceedences.
	MW-A16	S	2						X	X			X	X										No Cd SL exceedences.
2B	MW-6S	S	11	X			X	X	X	X			X	X										No Cd SL exceedences.
	MW-8I	I	12	X			X	X	X	X			X	X										
	MW-11S**	S	12	X			X	X	X	X			X	X										
	MW-5I	I	14	X			X	X	X				X											
	MW-8S	S	12	X			X	X	X				X											
	MW-11I**	I	12	X			X	X	X				X											
	MW-11D	D	12	X			X	X	X				X											
	SWMU17-OB-1**	B	2	X			X	X	X				X											
2C	MW-A12	S	2	X			X	X																Obstruction at 4.6 ft btoc. No SL exceedences.
	MW-A13	S	2	X			X	X																Added to replace MW-A12. No SL exceedences.
Area 3: Retained Area (6 wells)																								
3A	B41MW-18	S	3	X			X	X	X															No SL exceedences.
	B42N6	S	3	X			X	X																
3C	MW-A4	S	3	X			X	X																No SL exceedences.
3D	B41MW-5	S	4	X			X	X	X		X		X				X							No As, Ba, Cd SL exceedences.
	B41S5D	D	2	X			X	X	X	X	X	X	X	X			X	X						
3H	B4MW-9**	S	2				X	X	X	X							X	X	X					Deploy Snap Sampler® system after well repairs and survey. No As SL exceedences.
	B4MW-10	S	2				X	X	X								X		X					As (J-value) SL exceedence in 2008.
Area 6: GKN Facility (8 wells)																								
6A	MW1	S	11	X			X	X	X		X		X		X									As (J-value) exceedence in 2008, no Ba, Cd, Cr SL exceedences.
6B	B28MW3	S	10	X			X	X	X		X		X		X		X		X					No Ba, Cd, Cr, Hg, PCB SL exceedences.
	MW7	S	13	X			X	X	X		X		X		X		X		X					
	B27W3D	S	7	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	B28MW4	S	4	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X				
	MW3**	S	20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				No Ba, Cd, Cr, Hg, PCB, SVOC SL exceedences.
	MW9S	S	13	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				No Ba, Cd, Cr, Hg, PCB SL exceedences.
6C	B25MW1	S	10	X			X	X	X		X		X		X				X		X			
	MW5CS	S	13	X			X	X	X		X		X		X				X		X			
	MW5DS	S	13	X			X	X	X		X		X		X		X		X		X			
	MW8AS**	S	13	X			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		No Ba, Cd, Cr, VOC SL exceedences.
	MW8AD	D	13	X			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		
6D	MW6**	S	13	X					X						X									No Cr SL exceedences.
	MW6D	D	12	X					X						X									
Area 8: Office Complex North (2 wells)																								
8A	MW10S**	S	13	X					X	X	X	X			X	X	X	X						No Ba, Cr SL exceedences.
	MW10D**	D	13	X					X	X	X	X			X	X	X	X						
8B	MW4	S	10				X	X	X	X					X	X								As (J-value) SL exceedence in 2008. No Cr SL exceedences.

Notes:
Yellow highlighted cells indicate wells and analytes recommended to be dropped during the Fall 2010 and future groundwater sampling events.
* Analytical methods include modifications to drop dissolved metals from some wells per MDNR approval of 4/26/10 Memo and did not run copper on samples from B41MW-5 and B41S5D.
** Have Snap Samplers® and were also sampled using low-flow methods (except B4MW-9)
SL: Screening Value
VOC: Volatile Organic Compounds (8260)
SVOC: Semi-Volatile Organic Compounds (8270)
PCB: Polychlorinated Biphenyls (8082)
TPH-GRO: Total Petroleum Hydrocarbons - Gasoline Range Organics (8260)
TPH-DRO: TPH - Diesel Range Organics (8270)
TPH-ORO: TPH - Oil Range Organics (8270)
As, Ba, Cd, Cr, Mn: Arsenic, Barium, Cadmium, Chromium, Manganese (6010)
Hg: Mercury (7470)
Cr+6: Hexavalent chromium (7196)